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Patent claims

1. A method for controlling the transmitting power in a radio communications system by using a control system consisting of an inner control loop and an outer control loop, characterized in that
- the transmitting power of a subscriber station (UE) and/or a base station (NB) is varied by means of an inner control loop constructed for fast transmitting power control within a transmitting power interval (Pint) predetermined by an outer control loop constructed for slow transmitting power control, and in that
 - the slow transmitting power control is in each case performed in the base station (NB) by means of the outer control loop, which only exists there, both for the uplink (UL) from a subscriber station (UE) to a base station (NB) and for the downlink (DL) from the base station (NB) to the subscriber station (UE).
- 20 2. The method as claimed in claim 1, characterized in that the transmitting power interval (Pint) is defined by a maximum transmitting power (P_{max}) and a minimum transmitting power (P_{min}).
- 25 3. The method as claimed in claim 1 or 2, characterized in that the transmitting power interval (Pint) is defined individually for the subscriber station (UE) and/or for the base station (NB).
- 30 4. The method as claimed in a preceding claim,

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characterized in that transmitting power intervals (Pint) of a number of subscriber stations (UE) which have set up connections in parallel in the same frequency band (B) and/or in the same timeslot (ts), are dimensioned in such a manner that a predetermined dynamic range of a receiving device of the base station (NB) is not exceeded.

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5. The method as claimed in a preceding claim, characterized in that the base station (NB) signals to the subscriber station (UE) the transmitting power interval (Pint) or the maximum transmitting power (Pmax) and the minimum transmitting power (Pmin) for the signal transmission in the uplink (UL).
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6. The method as claimed in a preceding claim, characterized in that the transmitting power interval (Pint) is dimensioned in dependence on a service transmitted over the link between the base station (NB) and the subscriber station (NB).
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7. The method as claimed in a preceding claim, characterized in that the transmitting power interval (Pint) is dimensioned in dependence on a speed (V) of the subscriber station (UE).
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8. The method as claimed in a preceding claim, characterized in that the transmitting power interval (Pint) is progressively reduced with increasing speed (V) of the subscriber station (UE).
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9. The method as claimed in claim 7 or 8, characterized in that the speed (V) of the subscriber station (UE) is estimated from
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with respect to a variation of transmission characteristics of the radio interface, the transmission characteristics being determined by means of a characteristic value (BER).

- 5 10. The method as claimed in the preceding claim, characterized in that a bit error rate, a time frame error rate, a path attenuation and/or an interference at the location of the subscriber station (UE) is determined as the characteristic value (BER) for the transmission characteristics.
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11. The method as claimed in claim 9 or 10, characterized in that the variation of the characteristic value (BER) of a signaling channel (BCCH) transmitted with constant transmitting power by the base station (NB) is determined in the subscriber station (UE).
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12. The method as claimed in one of claims 9 to 11, characterized in that the characteristic value (BER) is averaged over a particular time interval and the averaged characteristic value (BERavg) is taken into consideration for the dimensioning of the transmitting power interval (Pint).
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13. The method as claimed in the preceding claim, characterized in that the time interval for averaging corresponds to a periodicity of the slow transmitting power control in the outer control loop.
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14. The method as claimed in one of claims 9 to 13,
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characterized in that an updating of the dimensioning of the transmitting power interval (P_{int}) is initiated when the variation of the transmission characteristics of the radio interface determined drops below a predetermined threshold value.

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15. The method as claimed in a preceding claim, characterized in that the fast and/or slow transmitting power control for the uplink (UL) and/or for the downlink (DL) are based on the determination of a carrier/interference ratio (CIR).
15. The method as claimed in one of claims 9 to 15, characterized in that the characteristic value (BER) determined is compared with a target BER in the outer control loop and a difference (dBER) between the values is calculated.
20. The method as claimed in the preceding claim, characterized in that the difference (dBER) between the characteristic value (BER) determined and the target BER is weighted by a weighting factor (g).
25. The method as claimed in the preceding claim, characterized in that the weighted difference (dCIR) is added to a target CIR(i) of a preceding control interval (i) from which the current target CIR, CIR($i+1$) for the current control interval ($i+1$) is determined.

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19. The method as claimed in the preceding claim, characterized in that the outer control loop for the subscriber station (UE) is also implemented in the base station (NB), in which arrangement an in each case current target CIR is generated in the outer control loop from a current characteristic value (BER) determined by the subscriber station (UE) and signaled to the base station (NB), and is signaled to the subscriber station (UE).
- 10 20. The method as claimed in a preceding claim, characterized in that the radio communications system supports a TDD transmission method.
- 15 21. The method as claimed in one of claims 1 to 19, characterized in that the radio communications system supports an FDD transmission method.